

are rejected and claims 2, 3, and 18 are objected to. Second, the drawings filed on March 29, 2004 are also objected to.

II. Petition for Extension of Time

The Applicants have submitted a Petition for Extension of Time under 37 C.F.R. §1.136(a) and the appropriate fee.

III. Applicant's Response

The Applicants thank respectfully the Examiner for his care in consideration of this application. The Applicants hereby make the following amendments:

1. The drawings are rearranged and amended to show every feature of the invention specified in the claims, and numbered in consecutive Arabic numerals respect to each view of drawing (Please see enclosed amendment).
2. The Brief Description of the Figures and the Detailed Description of the Preferred Embodiments has amended to accompany any changes in the figures (Please see enclosed amendment).
3. Claims 1-22 are amended in response to Examiner's restriction requirements (Please see enclosed amendment).

IV. Conclusion

The inventions (claims 1-22) are distinct, each from the other patents or applications cited by examiner in connection with this application because of the following reasons:

Claims 1-3 and 6-9 are rejected, as well as understood, under 35 U.S.C. 102(b) as being anticipated by Coffee (4,964,885). Coffee shows a so-called reservoir (6) for use with electrostatic spraying device, the reservoir (6) comprising: at least one earthed field-adjusting member (13) and earthed needles (15) which are separated from the high voltage source connected capillary tube (9) by the insulating inverted dish (12). In addition, the nozzle ring configuration (13, 15) has been applied with different polarity from the spraying nozzle region (9) in Coffee's invention. In stead of applying different polarity from nozzles to nozzle ring configuration, it has claimed from applicant's invention that the nozzle-ring configuration (50) having a voltage of the same polarity from the high voltage generator 60 as that applied to the material (23) to be sprayed through a direct connection between terminals (61) and a designated terminal (34) from a reservoir (20) is developed in use, the nozzle-ring configuration (50) being arranged in such a way as to generate the electric field in the vicinity of the nozzles (30) so that spraying from the nozzles is focused.

Regarding claims 2 and 3, as well as understood over Coffee's invention, the nozzles (9) and nozzle ring configuration (13, 15) having different polarity are mounded in a fixed relation to the material conduction

tube region (being called as distributor (7) in Coffee's invention) (7) connected to the body of the sprayer through the screw-threaded eye (5) attaching to a single replaceable reservoir (6) (figure 1) instead of the multiple replaceable reservoirs. In addition, the nozzles (30) and the nozzle ring configuration (50) having same polarity claimed in applicant's invention are mounded in a fixed relation to the to the body of the multiple replaceable reservoirs (20) integrated with the spraying nozzle region (31) and the material conducting tube region (40) as a whole unit (figures 2A, 5A and 7A) instead of attaching to the distributor (7) being considered as part of the body of the spaying device in Coffee's invention

Regarding claims 6 and 7, as well as understood, the nozzles (30) claimed in applicant's invention are mounded in a fixed relation to the body of the multiple replaceable reservoirs (20) and the nozzles (30) are arranged at a range of an angle from 0 to 45 degrees to the axis of the body of the multiple replaceable reservoirs (figure 3A) instead on the body of the device in Coffee's invention.

Regarding claims 8 and 9, as well as understood, the spraying nozzles (9) are not mounted directly to the body of the reservoir (6) in Coffee's invention (figures 1 and 2). The spraying nozzles (9) are first mounded in a fixed relation to the material conduction tube region (being called as distributor (7) in Coffee's invention) (7) then connected to the body of the sprayer through the screw-threaded eye (5) eventually attaching to a single replaceable reservoir (6). The screw-threaded eye (5) and the distributor (7)

are considered as part of the body of the spaying device. Coffee did not claim the replaceable reservoir (6), the distributor (7) and the screw-threaded eye (5) as a whole unit (figures 1 and 2).

Claims 17-19 are rejected, as well as understood, under 35 U.S.C. 102(b) as being anticipated by Ohno et al (3,887,928). Ohno shows an electrostatics spraying device comprising a high voltage generator (7), a dispensing nozzles (3), a fixed reservoir (2) for containing materials to be sprayed, means (wire in figure 2) coupling the high voltage generator to the materials, a nozzle ring configuration (9) having a high voltage supply (10) of the same polarity as that applied to the material (column 4, line 42-3), the nozzle ring configuration being located forwards of the nozzles (3). The nozzle ring configuration (9) having a high voltage supply (10) of the same polarity as that applied to the nozzles (3) and the material (column 4, line 42-3) is acting for stopping the liquid jetting from the dispensing nozzles (3) when the voltage is applied (column 4, line 44-54). However, applicant's invention claims the nozzle-ring configuration (50) having a voltage of the same polarity from the high voltage generator 60 as that applied to the material (23) to be sprayed through a direct connection between terminals (61) and a designated terminal (34) from a reservoir (20) is developed in use, the nozzle-ring configuration (50) being arranged in such a way as to generate the electric field in the vicinity of the nozzles (30) so that spraying from the nozzles is focused and facilitated.

Claims 10-16 are rejected, as well as understood, under 35 U.S.C.

103(a) as being unpatentable over Ohno et al (3,887,928) in view of Wang et al (US2004/0050946). As applicant mentioned above, in stead of applying same polarity to nozzles and nozzle ring configuration for stopping the liquid jetting from the dispensing nozzles, applicant's invention claims the nozzle-ring configuration (50) having a voltage of the same polarity from the high voltage generator 60 as that applied to the material (23) to be sprayed through a direct connection between terminals (61) and a designated terminal (34) from a reservoir (20) is developed in use, the nozzle-ring configuration (50) being arranged in such a way as to generate the electric field in the vicinity of the nozzles (30) so that spraying from the nozzles is focused and facilitated. In additions, Wang et al shows an electrostatic spraying device comprising a pump for supplying the material from the reservoir to the nozzle. Contradicting to applicant's invention applying a high voltage electrostatic charge directly to the nozzles (30), material (23), and nozzle-ring configuration (50) to let the material being issued from the spraying nozzles (30) in a direction away from said spraying nozzles (30) forms an electrostatically charged spray, Wang et al shows an electrostatic spraying device using a compressed air supplying pump to generate fine mist through the spray nozzle of a earthed spray gun (column 4, section 0035, line 15-17 and section 0036, line 1-7) where the particles will be negative charged through the positive charged electrode (8) then following by a pulling force generated by the positive charged electrode (8) to facilitate the jetting

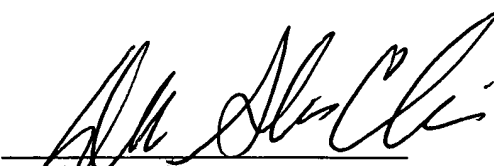
process (column 3, section 0035, line 8-10)(figure 1). The pumping means being claimed in applicant's invention is solely to supply material steadily through a passage leading to the dispensing nozzles, means coupling the high voltage output of the generator to the bulk material so that the voltage is conducted through the bulk material to the material present at the dispensing nozzles whereby the material issuing from the nozzles under a Electrohydrodynamic (EHD) or electrostatic force instead of using a compressed air supplying pump to generate large quantity of air-compressed mist from the earthed nozzle where mist being charged and attracted by the positive charged electrode (8). Therefore, it would have not been so oblivious to one of ordinary skill in the art at the time of the applicant's invention to claim the pumping means being fundamentally different in all technical aspects from the claims of Wang et al to the electrostatic sprayer also being fundamentally different in technical aspects from the claims of Ohno.

Regarding claims 13-16, as well as understood, the priming of the passage is performed in a steady and volume controlled fashion when the pumping means is first actuated and the material is first introduced into the nozzle region not through an air-compressed mist fashion (Wang et al's invention) but a transporting means for carrying material from the reservoir to the nozzle through the material conducting tube region for a further high voltage generated electrostatic charge spraying.

Commissioner for Patents
October 30, 2006
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The Applicants

Respectfully submitted,



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Enclosures:

Amended Drawing (33 pages)

Amended Brief Description of the Figures (4 pages)

Amended Detailed Description of the Preferred Embodiments (5 pages)

Amended Claims (7 pages)

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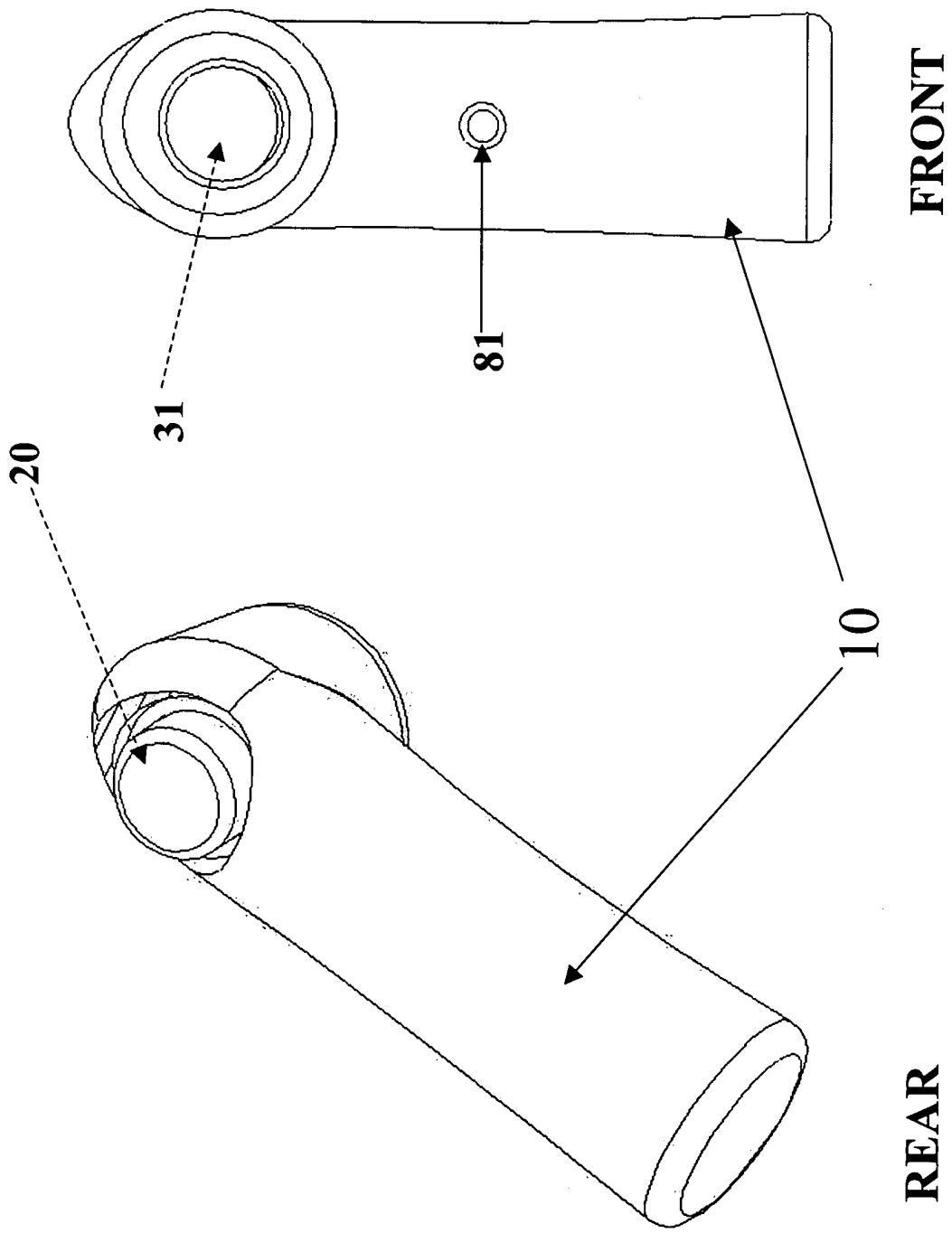


FIG. 1

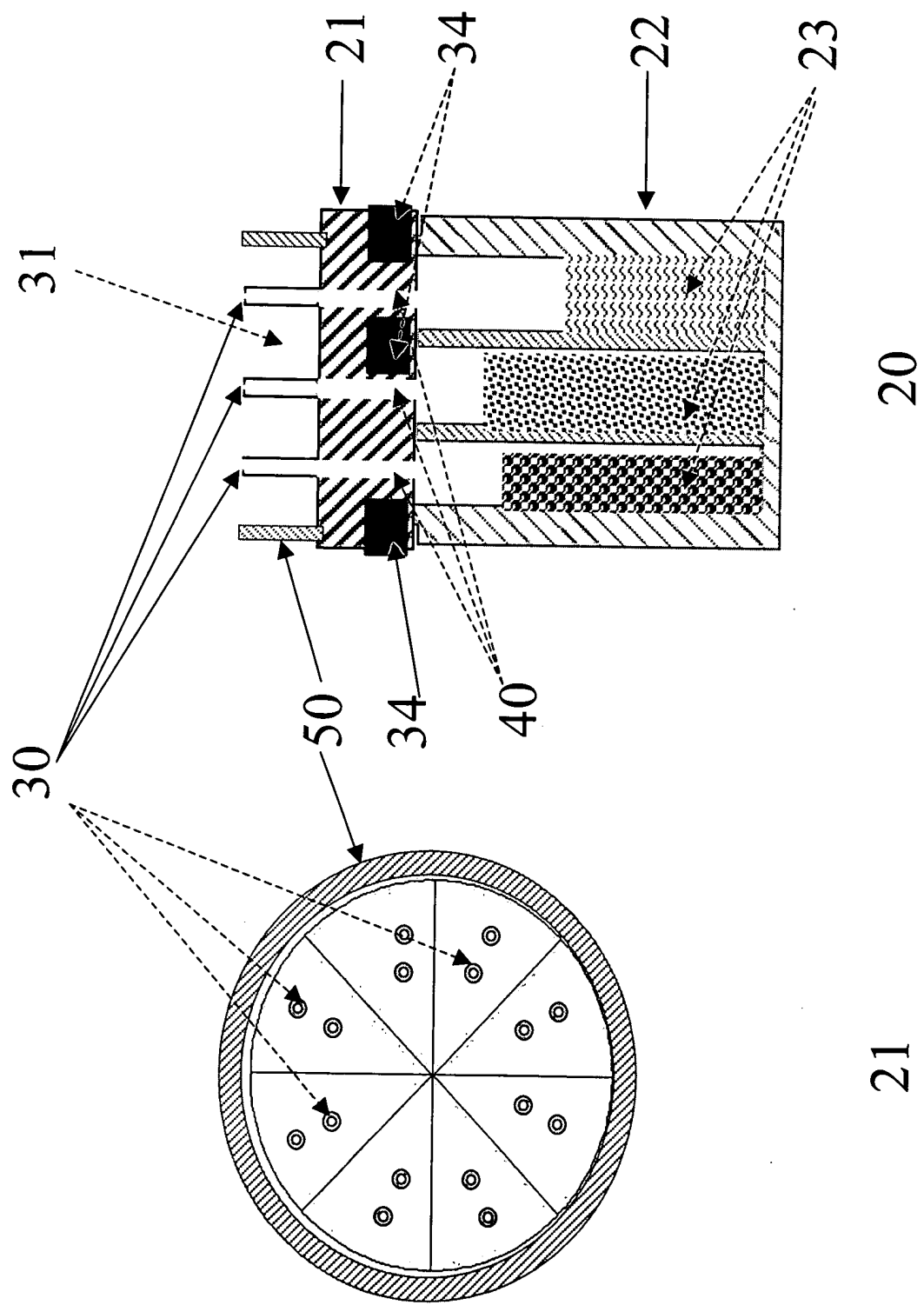


FIG. 2

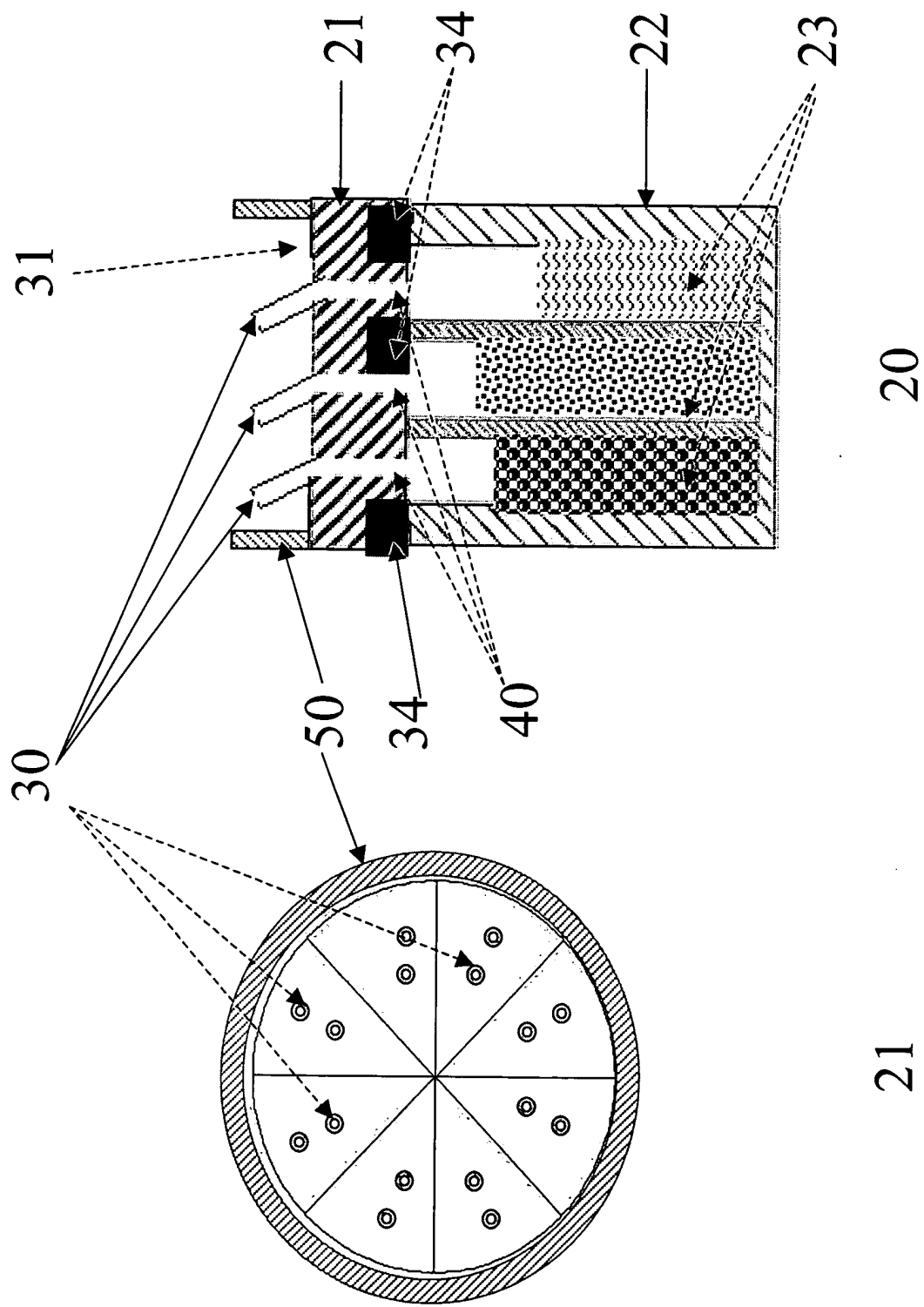


FIG. 2A

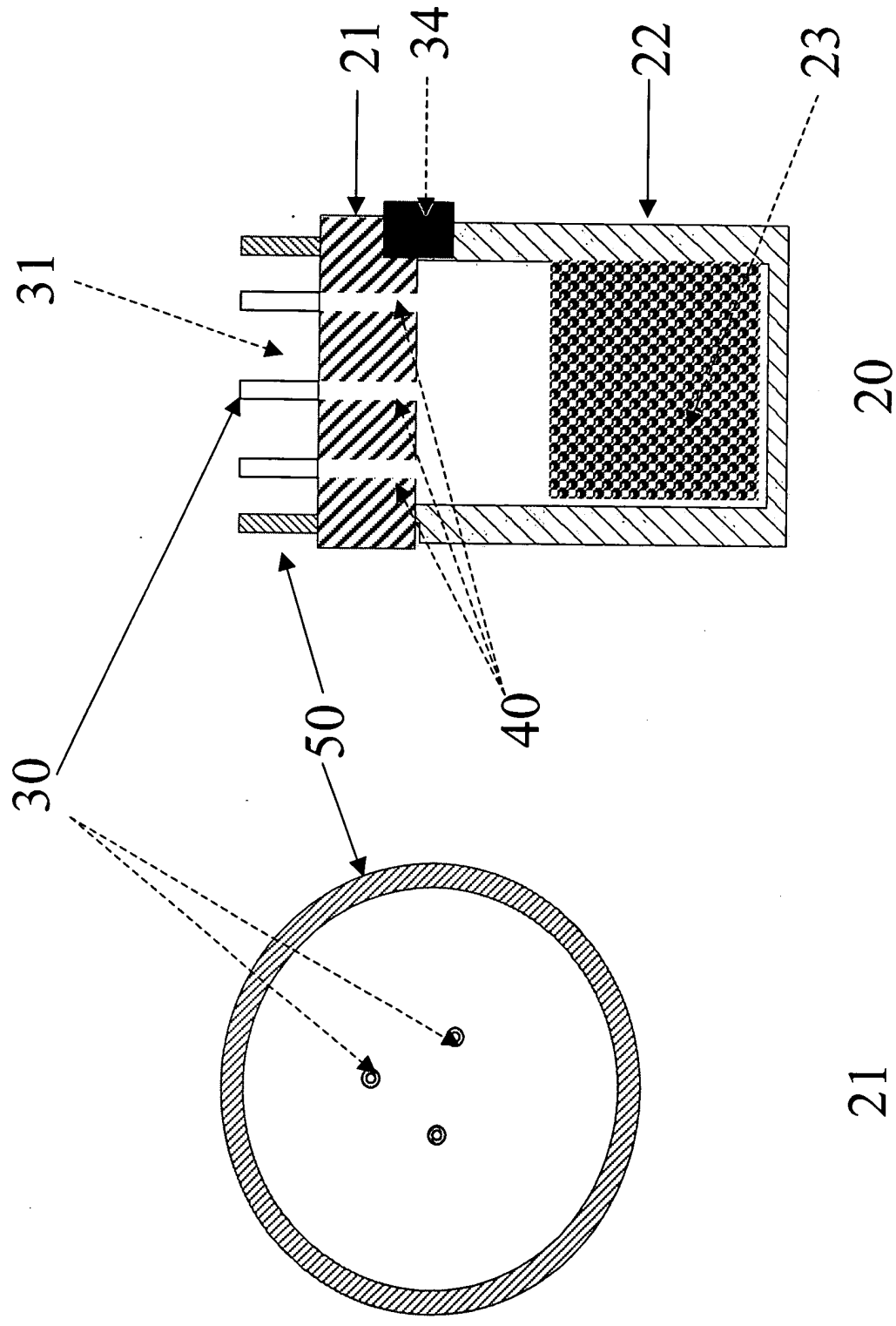


FIG. 3

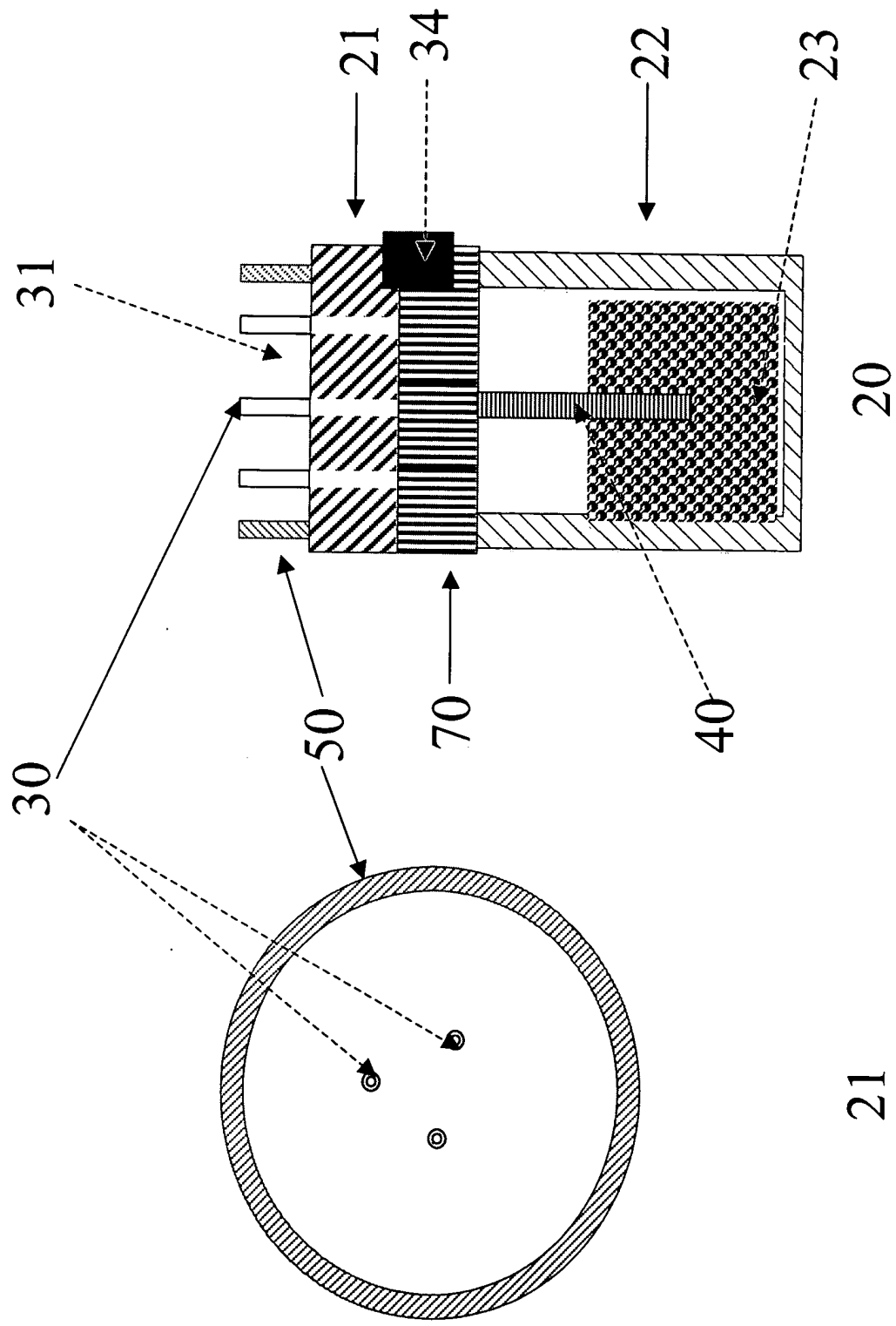


FIG. 3A

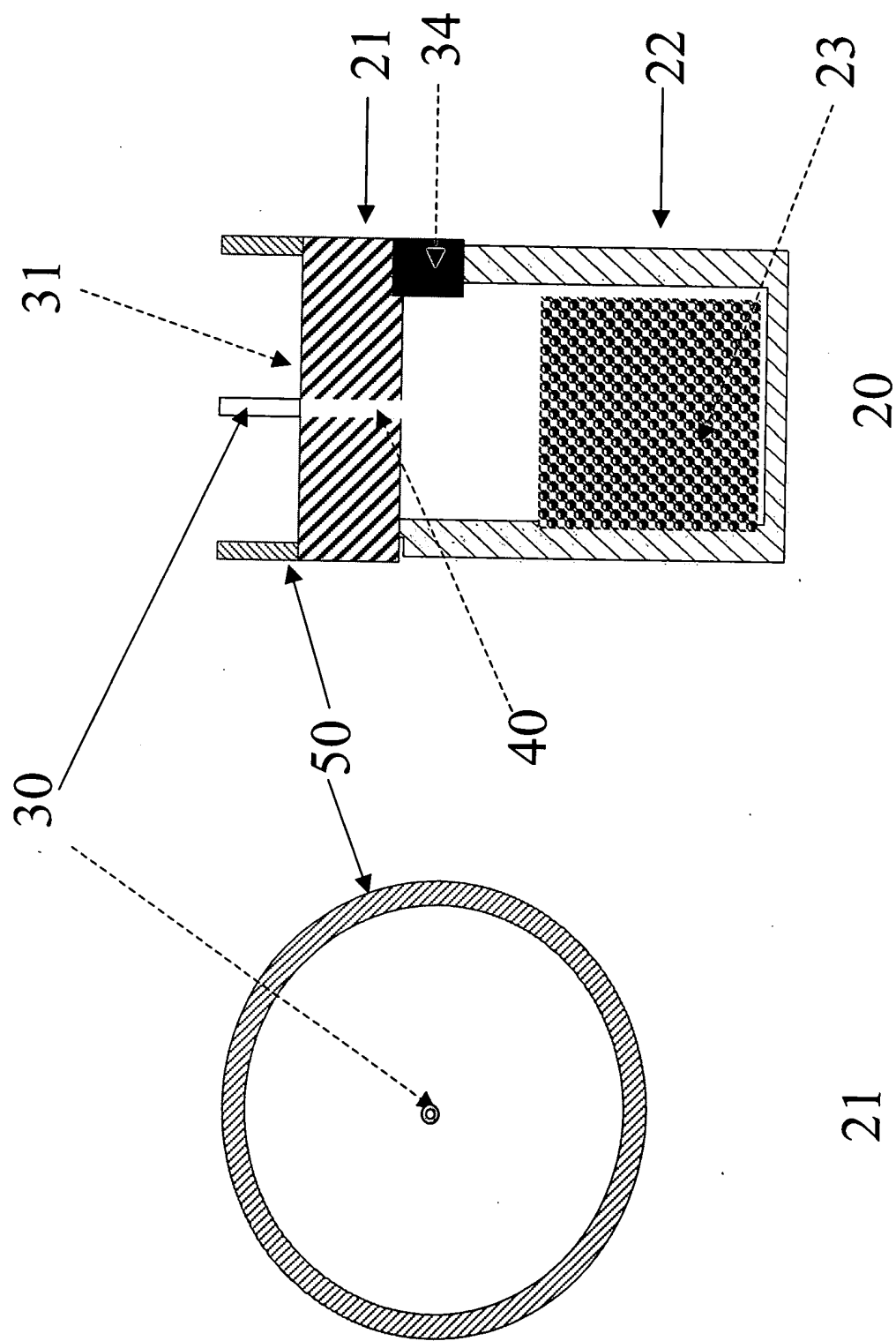


FIG. 4

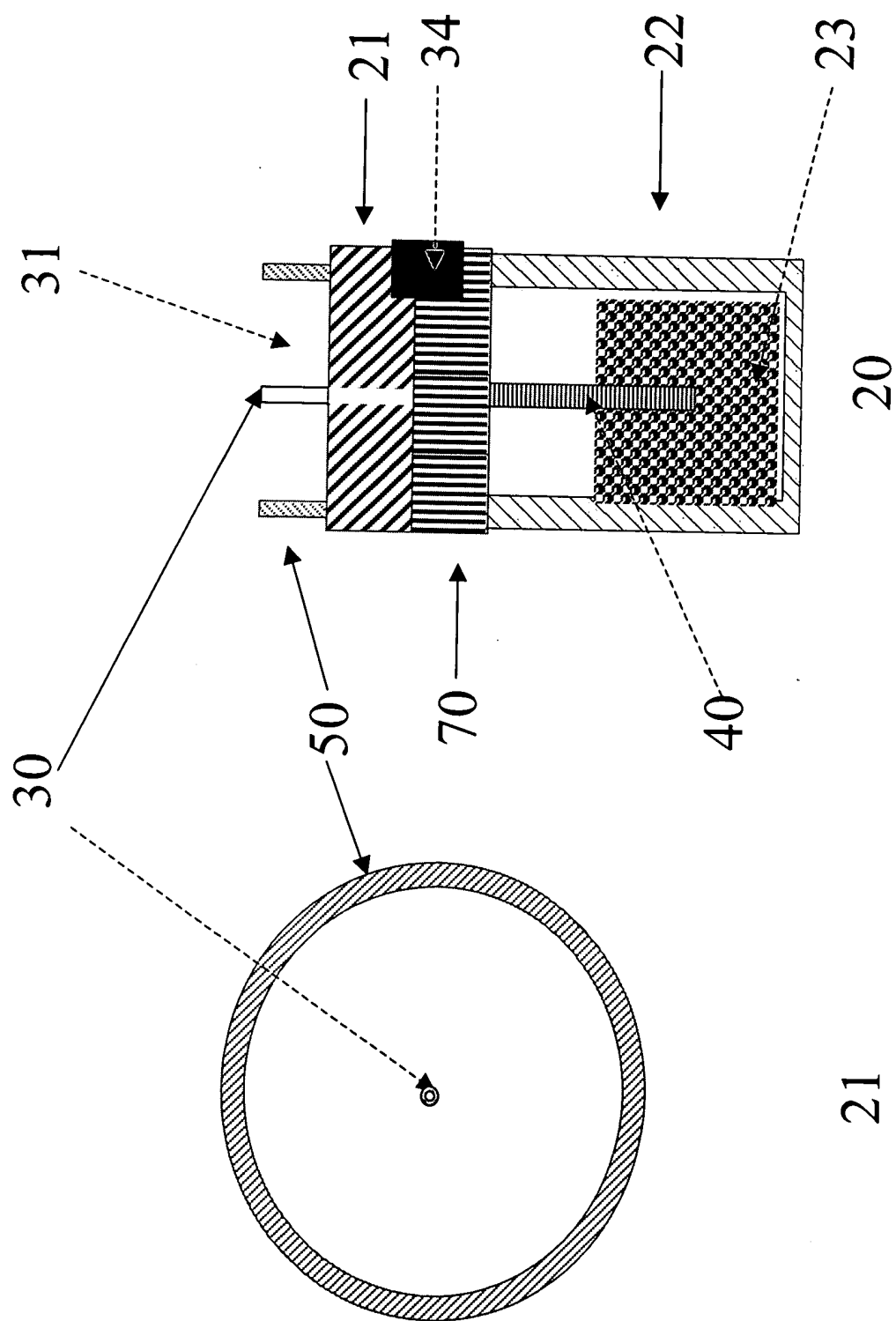


FIG. 4A

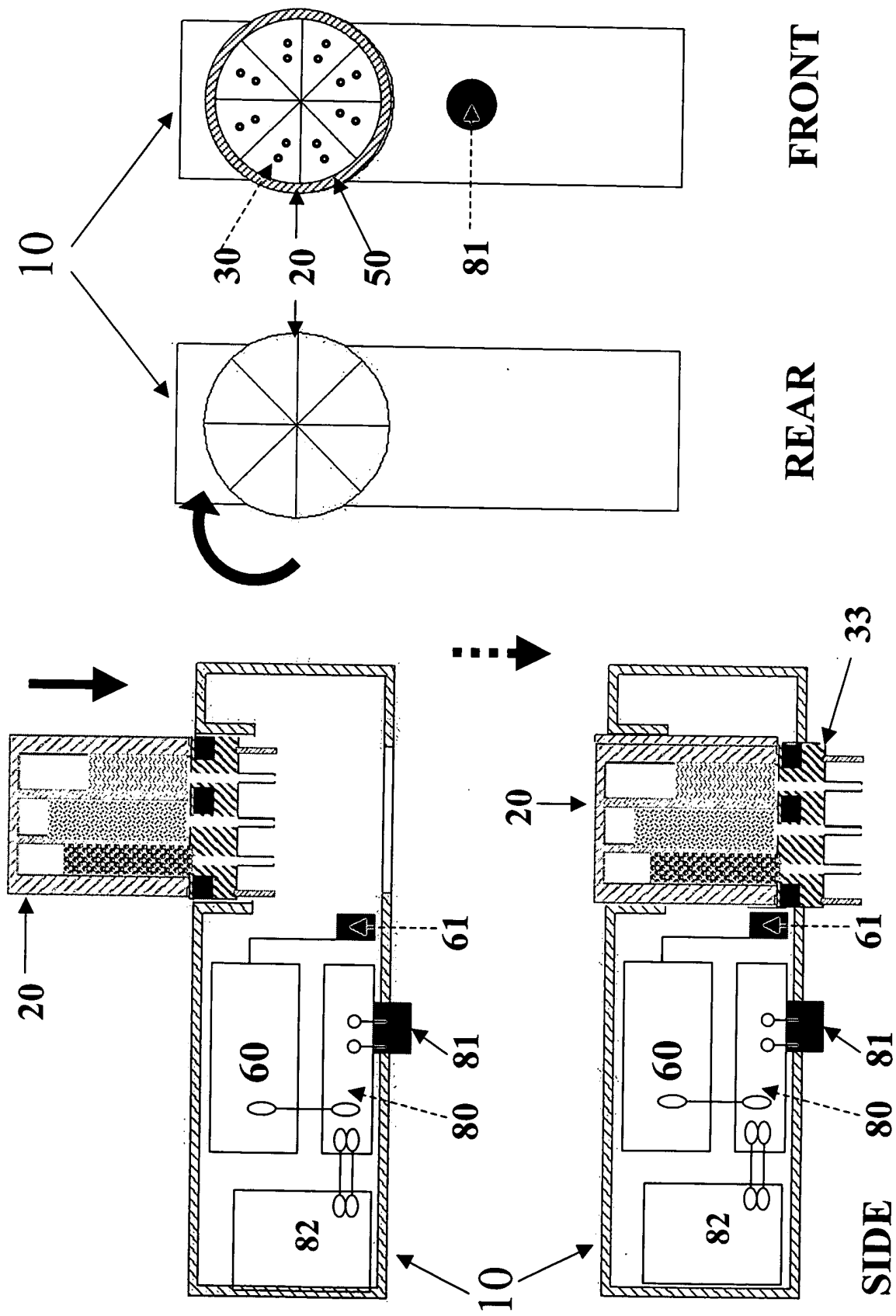


FIG. 5

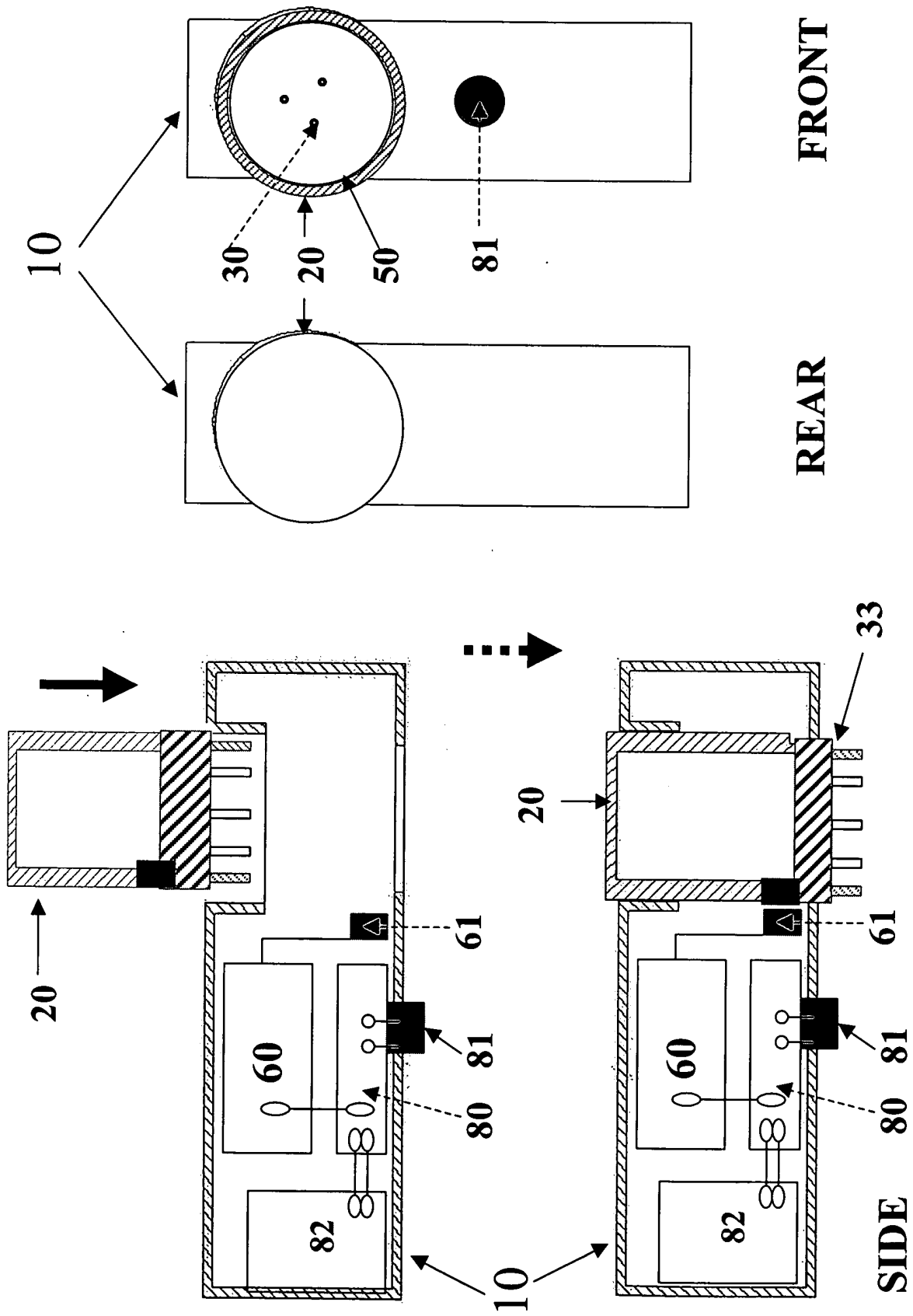


FIG. 5A

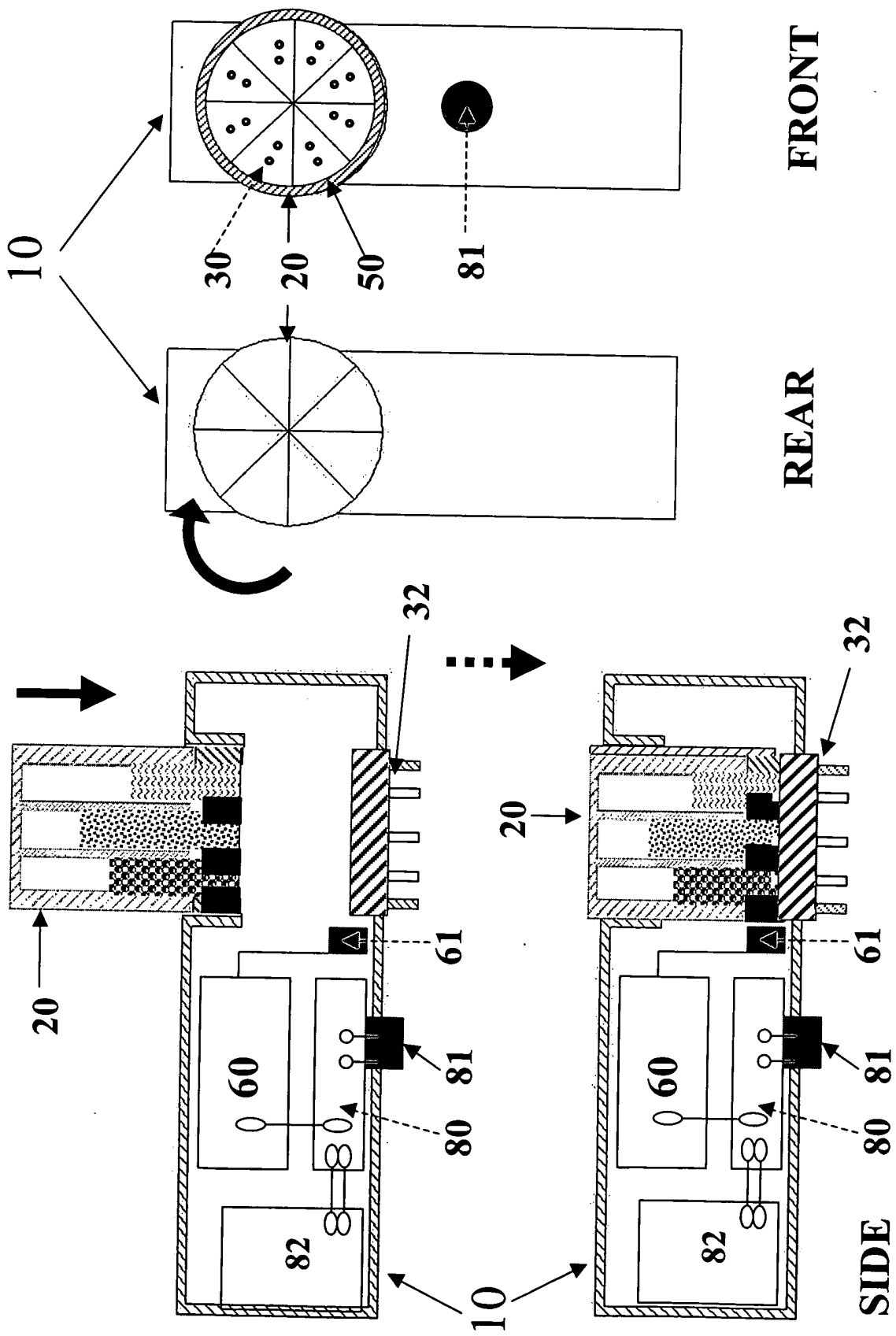


FIG. 5B

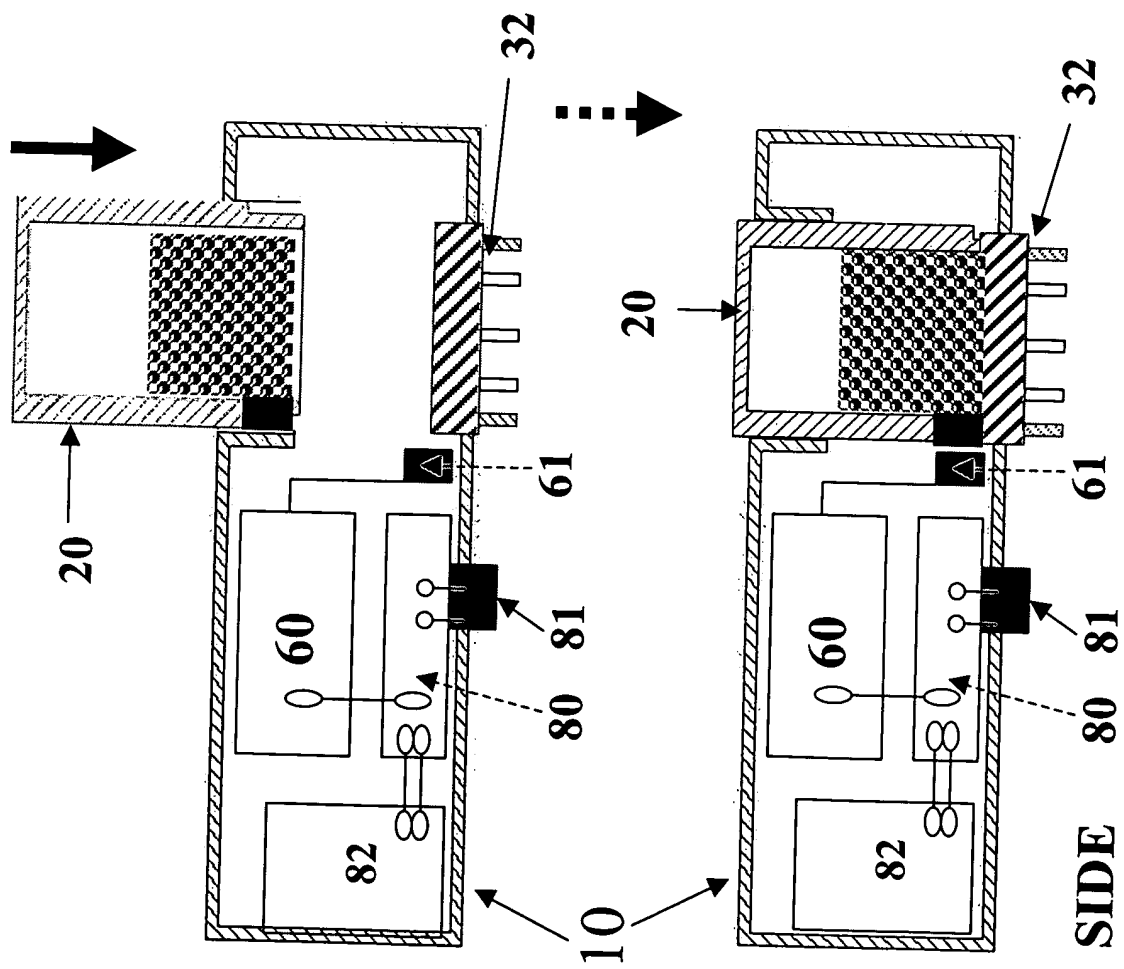
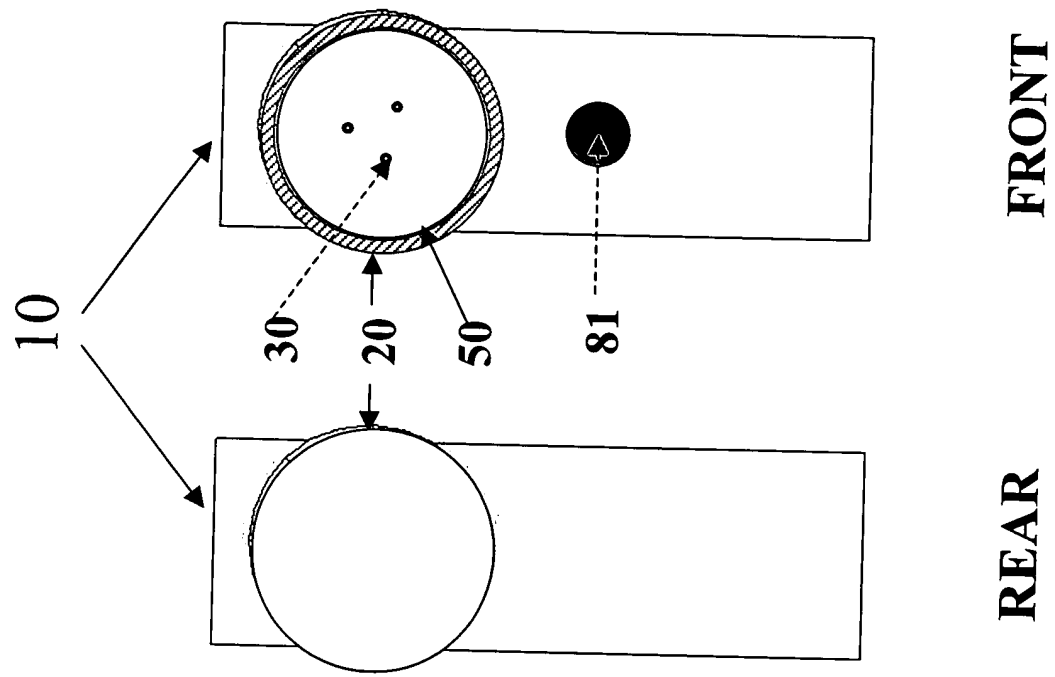


FIG. 5C

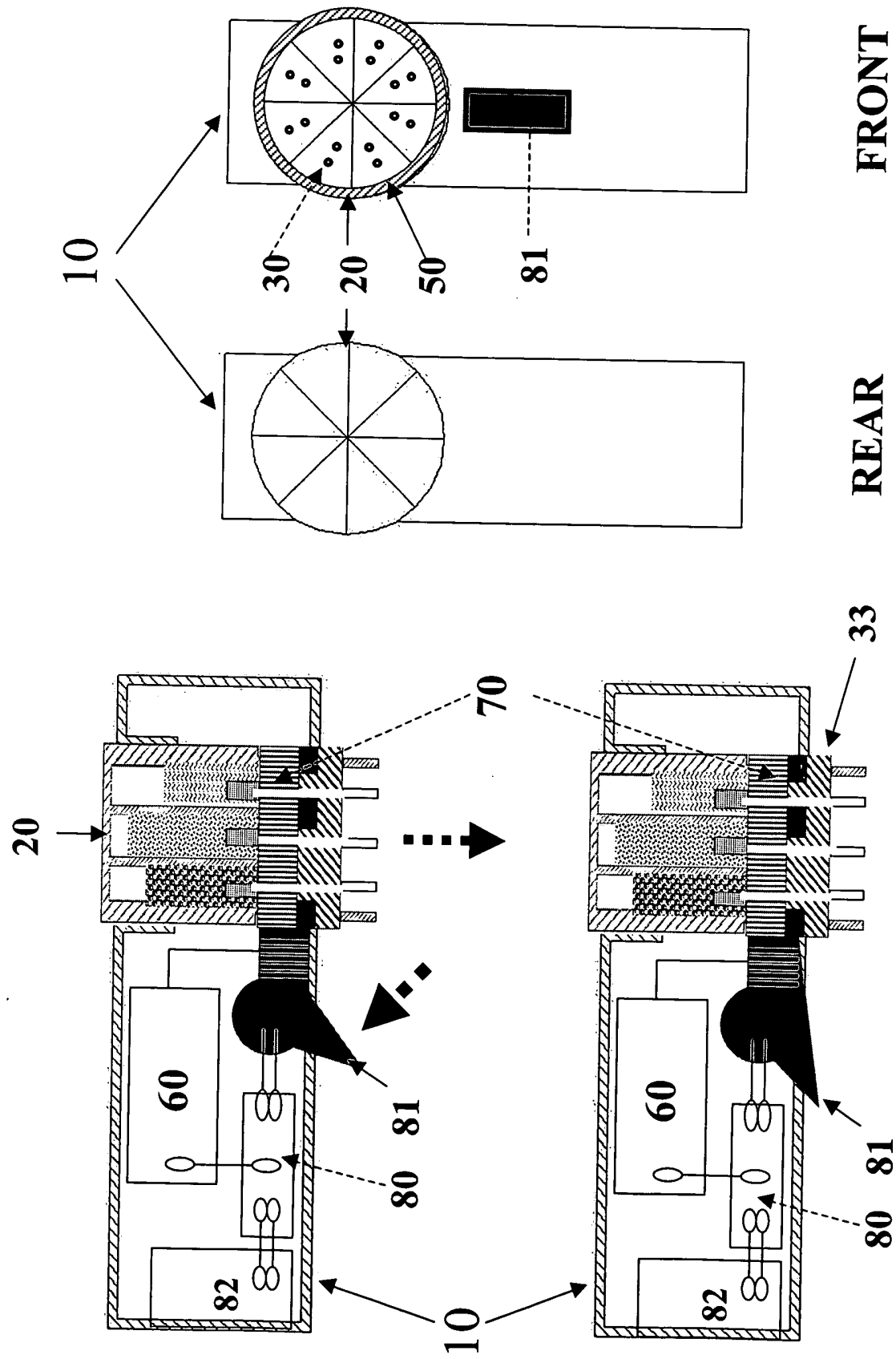


FIG. 6

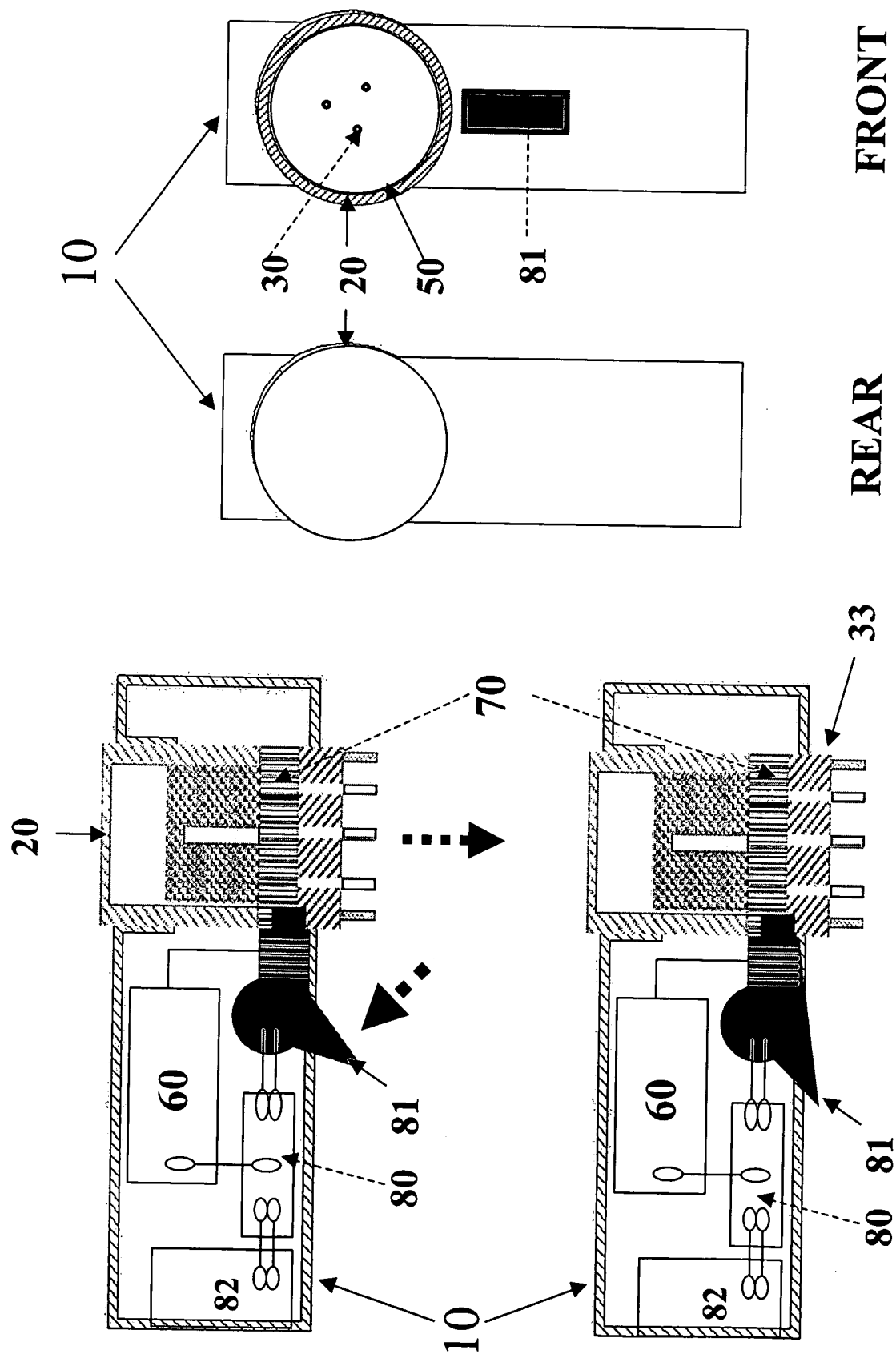


FIG. 6A

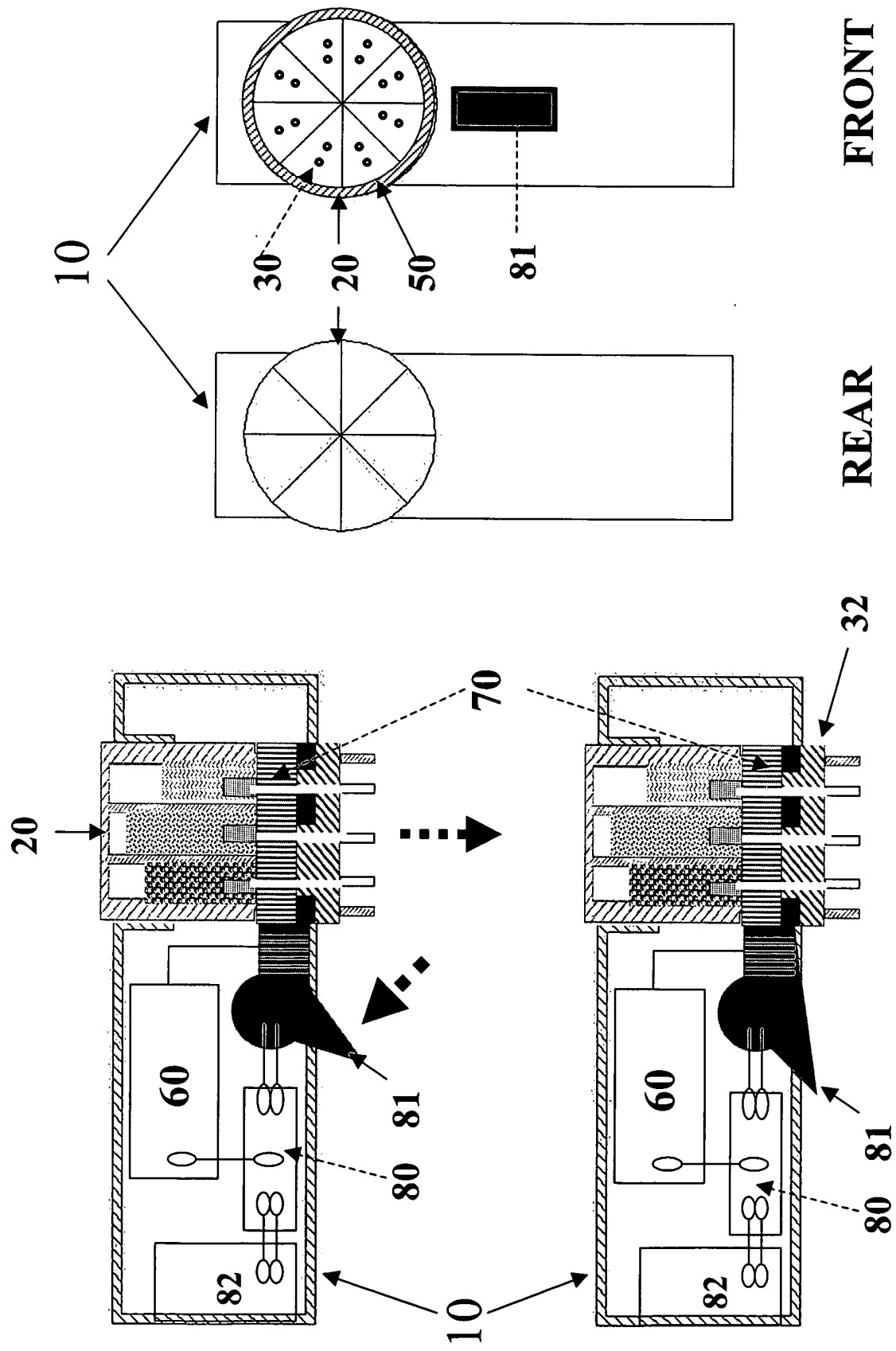


FIG. 6B

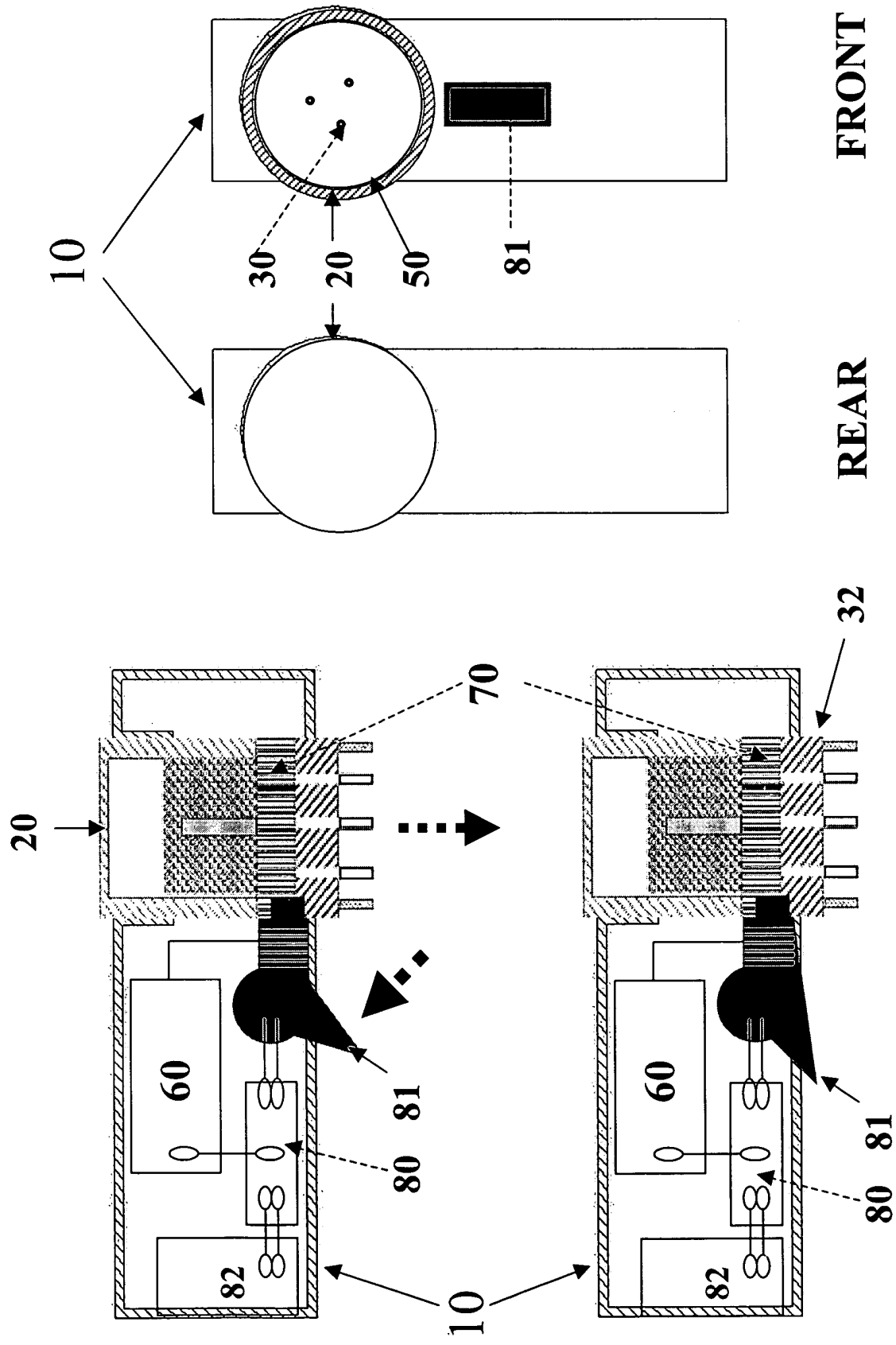


FIG. 6C

FIG. 17B

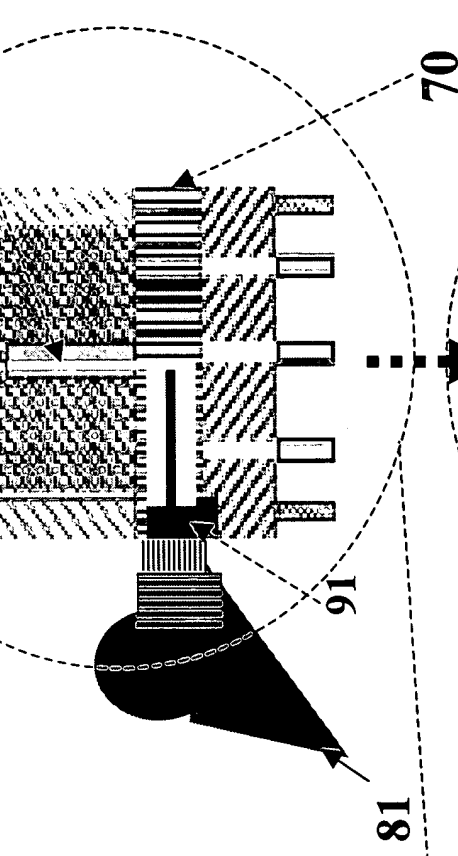


FIG. 17C

